

Translated from the Russian

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DESCRIPTION OF INVENTION**with Author=s Certificate****SU 313794**

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Applicant: ALeningrad@ Technology Institute, named after Aleningrad's Council@ and decorated with the order of ARed Banner of Labor@

Title in Russian of the object of the invention: STEKLO

GLASS

The invention pertains to oxygen inorganic types of glass, possessing a high ionic electrical conductance. The invention may find an application in many branches of industry, in particular when used as separating membrane and in electrochemical generators [cells] of electricity (heating elements), for the manufacturing of thermistors, for electrochemical production of ultra-pure alkali metals, and in many other branches of technology wherein the use of inorganic materials, having high ionic conductance is required.

A glass, containing SiF, Al₂O₃, P₂O₅, is known.

It is an object of the invention to increase the volume resistivity of the glass at room temperature up to $10^6 - 10^7$ ohm/cm, and to $10^2 - 10^3$ ohm/cm at 300°C.

The set objective is achieved as a result of the fact that the glass contains the said ingredients in the following percentage, in mol by %:

	SiF	40 - 70
	Al ₂ O ₃	5 - 15
	P ₂ O ₅	15 - 25,
and, besides this,	Li ₂ O	10 - 40.

The ionic electrical conductance of the said glass is 100,00times greater at room temperature, and 1,000 times greater at 300°C in comparison to a sodium-calcium silicate glass, whose chemical stability is comparable, and which contains, the following ingredients, in % by mol:

Na ₂ O	20
CaO	10
SiO ₂	70.

The characteristics of silicate and phosphate types of glass, having the following composition , in % by mol:

I		II		III	
Na ₂ O	20	LiF	50	LiF	50
CaO	10	Al ₂ O ₃	5	Li ₂ O	30
SiO ₂	70	P ₂ O ₅	15	Al ₂ O ₃	5
				P ₂ O ₅	15,

Are tabulated as follows:

Glass	Properties		
Composition	glass-melting	glass-melting	volume resistivity ohm/cm°[sic!]

			at room t°	at 150°	at 300°
I	1,450 - 1,500	7	5×10^{11}	2×10^7	1×10^5
II	900	0.5	1×10^8	3×10^5	1×10^4
III	900	0.5	2×10^6	$5 \times 10^{3[?]}$	1×10^2

The proposed lithium oxyfluorophosphate glass is a low-melting one [fusible] while its melting temperature does not exceed 950°C. It is chemically stable, i.e. non-hygroscopic, and, for practical purposes, it does not dissolve in water. Its capability to crystallize is low.

CLAIM

Glass, comprising LiF, Al₂O₃, P₂O₅, *characterized in that* with an aim to increase the ionic electrical conductance, the glass contains the said ingredients in the following percentage, in % by mol:

	SiF	40 - 70
	Al ₂ O ₃	5 - 15
	P ₂ O ₅	15 - 25,
and, besides this,	Li ₂ O	10 - 40.

Translated by John M Koytcheff, M.Sc.
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